

WHAT IS CLAIMED IS;

1. An electrolyte for a nonaqueous battery consisting essentially of magnesium bistrifluoromethanesulfonimide.
2. A method for producing an electrolyte for a nonaqueous battery comprising the step of reacting magnesium carbonate or magnesium hydroxide with an imide compound to produce the electrolyte for a nonaqueous battery.
3. A method for producing an electrolyte for a nonaqueous battery comprising the step of reacting magnesium carbonate or magnesium hydroxide with trifluoromethanesulfonimide to produce magnesium bistrifluoromethanesulfonimide.
4. An electrolytic solution for a nonaqueous battery comprising:
 - 15 magnesium bistrifluoromethanesulfonimide; and an organic solvent and/or a room temperature molten salt having a melting point of 60°C or less in which the magnesium bistrifluoromethanesulfonimide is dissolved.
5. The electrolytic solution for a nonaqueous battery according to claim 4, wherein at least one kind selected from the group consisting of a cyclic carbonate, a chain carbonate, a cyclic ether, a chain ether, a cyclic ester and a chain ester is used as the organic solvent.
6. The electrolytic solution for a nonaqueous battery according to claim 4, wherein the organic solvent is at

least one kind selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, trifluoropropylene carbonate, fluoroethylene carbonate, dimethyl carbonate, diethyl carbonate, methyl ethyl 5 carbonate, sulfolane, tetrahydrofuran, crown ether, dimethoxyethane, ethoxymethoxy ethane, diethoxyethane, γ -butyrolactone, valerolactone, angelica lactone, methyl formate, methyl acetate and methyl propionate.

7. The electrolytic solution for a nonaqueous battery 10 according to claim 4, wherein an ammonium salt is used as the room temperature molten salt.

8. The electrolytic solution for a nonaqueous battery according to claim 7, wherein the ammonium salt is trimethylpropyl ammonium-bis-(trifluoromethylsulfonyl) imide.

15 9. A nonaqueous battery comprising:
a positive electrode;
a negative electrode; and
an electrolytic solution including magnesium
bistrifluoromethanesulfonimide, and an organic solvent
20 and/or an ordinary temperature molten salt having a melting
point of 60°C or less in which the magnesium
bistrifluoromethanesulfonimide is dissolved.

10. The nonaqueous battery according to claim 9,
wherein the nonaqueous battery is a magnesium ion battery.

25 11. A nonaqueous electrolyte battery comprising:

a nonaqueous electrolyte including an ether based solvent and a magnesium salt;

a positive electrode including magnesium as an active material; and

5 a negative electrode including magnesium as an active material.

12. The nonaqueous electrolyte battery according to claim 11, wherein the ether based solvent includes a chain ether.

10 13. The nonaqueous electrolyte battery according to claim 12, wherein the chain ether is dimethoxyethane (DME).

14. The nonaqueous electrolyte battery according to claim 11, wherein the magnesium salt includes at least one of an imide salt and a sulfonate.

15 15. The nonaqueous electrolyte battery according to claim 14, wherein the imide salt is an alkylsulfonylimide salt.

16. The nonaqueous electrolyte battery according to claim 15, wherein the alkylsulfonylimide salt is magnesium 20 bistrifluoromethanesulfonimide.

17. The nonaqueous electrolyte battery according to claim 14, wherein the sulfonate is an alkylsulfonate salt.

18. The nonaqueous electrolyte battery according to claim 17, wherein the alkylsulfonate salt is magnesium 25 trifluoromethanesulfonate $[\text{Mg} (\text{CF}_3\text{SO}_3)_2]$.

19. The nonaqueous electrolyte battery according to
claim 11, wherein the positive electrode or the negative
electrode includes at least one of a magnesium metal, a
magnesium alloy, a magnesium oxide, silicon, carbon,
5 fluorocarbon and a transition metal sulfide.